



**TITLE: Production Of Human Parathyroid  
From Microorganisms**  
**INVENTOR: KAARE M. GAUTVIK, L.**  
**SERIAL NO. 09/668,154**  
**SHEET 1, FIGURE 1**

# 13

**FIG. 1**

## DNA SEQUENCE FOR HUMAN PREPROPARATHYROID HORMONE

10 30 50  
ATGATHCCNGCNAARGAYATGGCNAARGTNATGATHGTNATGYTNGCNAHTGYTTYYTN

70 90 110  
ACNAARWSNGAYGGNAARWSNGTNAARAARMGNWSNGTNWSNGARATHCARYTNATGCAY

130 150 170  
AAYYTNGGNAARCAYTNAAYWSNATGGARMGNGTNGARTGGYTNMGNAARAARYTNCAR

190 210 230  
GAYGTNCAYAAYTTYGTCNYTNGGNGCNCNYTNGCNCCNMGNGAYGCNGGNWSNCAR

250 270 290  
MGNCCNMGNAARAARGARGAYAAYGTYNTGNTNGARWSNCAYGARAARWSNYTNGGNGAR

310 330  
GCNGAYAARGCNGAYGTNAAYGTNYTNACNAARGCNAARWSNCARTRR

$$M = A \text{ OR } C$$

$$R = A \text{ OR } G$$

$$W = A \text{ OR } T$$

S = C OR G

Y = C OR T

H = A OR C OR T

N = A OR G OR C OR T



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**SHEET 2, FIGURE 2**

## **FIG. 2**

### **DNA SEQUENCE FOR HUMAN PREPROPARATHYROID HORMONE IN PLASMID pSSHPTH-10**

10

30

50

TATGATGATACCTGCAAAAGACATGGCTAAAGTTATGATTGTCATGTTGGCAATTGTT

70

90

110

TCTTACAAAATCGGATGGGAAATCTGTTAAGAAGAGATCGTGGAGTGAAATACAGCTTAT

130

150

170

GCATAACCTGGGAAAACATCTGAACTCGATGGAGAGAGTAGAATGGCTGCGTAAGAAGCT

190

210

230

GCAGGGATGTGCACAATTGTTGCCCTGGAGCTCTAGCTCCAGAGATGCTGGTTC

250

270

290

CCAGAGGCCCGAAAAAAGGAAGACAATGTCTGGTTGAGAGCCATGAAAAAAGTCTTGGAA

310

330

GAGGCAGACAAGCTGATGTGAATGTATTAACTAAAGCTAAATCCCAGTGA

## FIG.3

PORTION OF DNA SEQUENCE OF THE PLASMID  
FOR INSERTION INTO E. COLI, CODING FOR HUMAN  
PREPROPARATHYROID HORMONE WITH FLANKING SEQUENCES.

10 30 50  
TATGATGATHCCNGCNAARGAYATGGCNAARGTNATGATHGTNATGYTNGCNATHGTGTT  
70 90 110  
YYTNACNAARWSNGAYGGNAARWSNGTNAARAARMGNWSNGTNWSNGARATHCARYTNAT  
130 150 170  
GCAYAAYYTNGNAARCAYYTNAAYWSNATGGARMGNGTNGARTGGYTNMGNAARAARYT  
190 210 230  
NCARGAYGTNCAYAAYTTGTNGCNYTNGGNCCNYTNGCNCCNMNGAYGCNGGNWS  
250 270 290  
NCARMGNCCNMGNAARAARGARGAYAAYGTNYTNGTNGARWSNCAYGARAARWSNYTNGG  
310 330 350  
NGARGCNGAYAARGCNGAYGTNAAYGTNYTNACNAARGCNAARWSNCARTRRAATGAAA  
370 390 410  
ACAGATATTGTCAGAGTTCTGCTCTAGACAGTGTAGGGCAACAATACATGCTGCTAATT  
430  
AAAGCTCTATTA

M = A OR C

R = A OR G

W = A OR T

S = C OR T

Y = C OR T

H = A OR C OR T

N = A OR G OR C OR T



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**SHEET 4, FIGURE 4**

## **FIG. 4**

**DNA SEQUENCE OF FOR HUMAN PREPROPARATHYROID  
HORMONE IN PLASMID pSSHPHTH-10 WITH FLANKING SEQUENCES.**

10 30 50  
TATGATGATACCTGCAAAAGACATGGCTAAAGTTATGATTGTCATGTTGGCAATTGTTT

70 90 110  
TCTTACAAAATCGGATGGAAATCTGTTAAGAAGAGATCTGTGAGTGAAATACAGCTTAT

130 150 170  
GCATAACCTGGGAAAACATCTGAACCTCGATGGAGAGAGTAGAATGGCTGCGTAAGAAGCT

190 210 230  
GCAGGGATGTGCACAATTTGTTGCCCTGGAGCTCCTCTAGCTCCCAGAGATGCTGGTTC

250 270 290  
CCAGAGGCCCGAAAAAAGGAAGACAATGTCTGGTTGAGAGCCATGAAAAAGTCTTGG

310 330 350  
AGAGGCAGACAAAGCTGATGTGAATGTATTAACAAAGCTAAATCCAGTGAAAATGAAA

370 390 410  
ACAGATATTGTCAGAGTTCTGCTCTAGACAGTGTAGGGCAACAATACATGCTGCTAATTG

430  
AAAGCTCTATTA

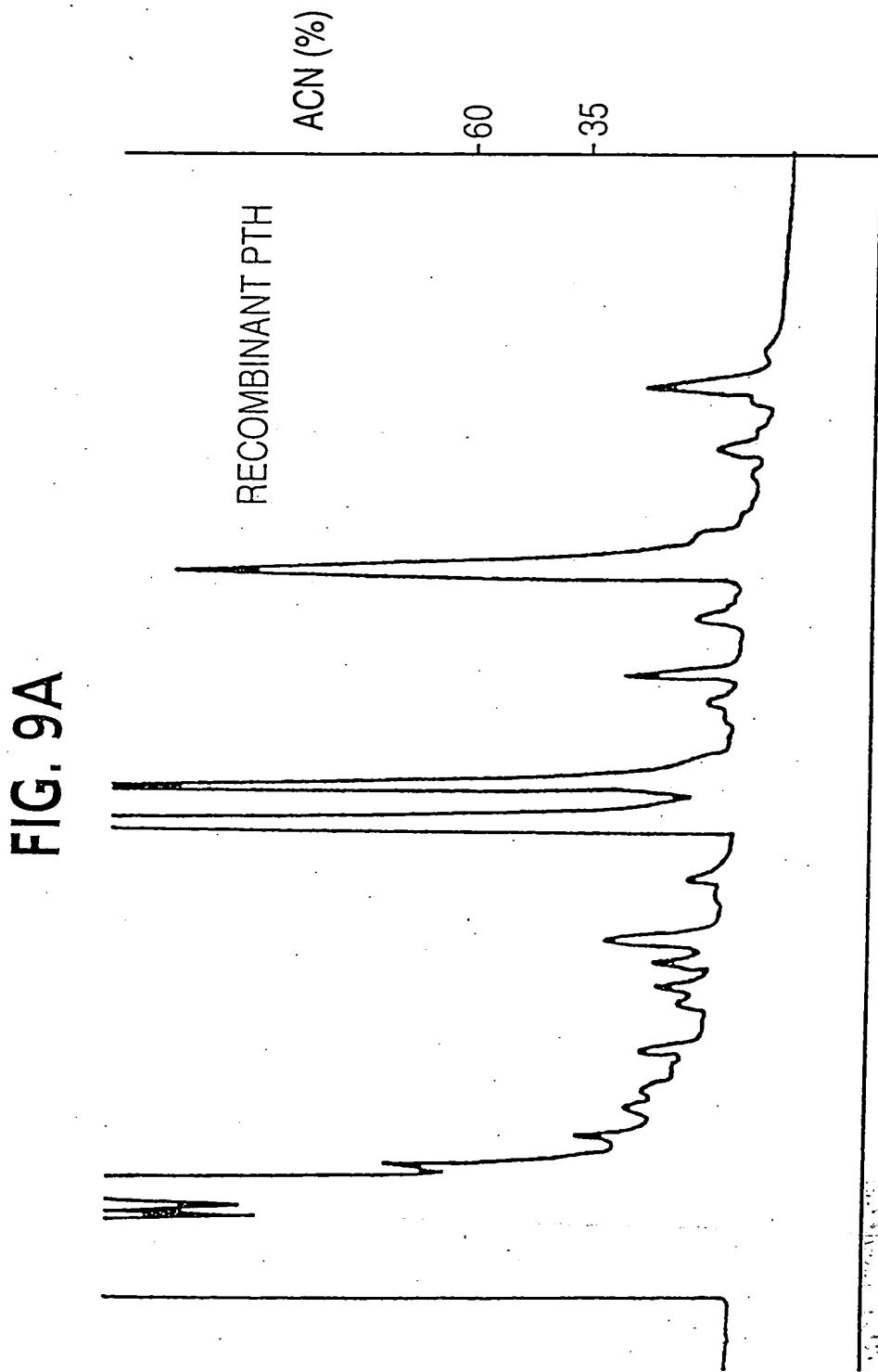


## FIG.5

DNA SEQUENCE CODING FOR PREPROPARATHYROID HORMONE  
IN pSSHPTH-10 WITH FLANKING SEQUENCES, SHOWING  
THE CORRESPONDING AMINO ACID SEQUENCE OF  
PREPROPARATHYROID HORMONE

10	30	50		
TATGATGATACCTGC	AAAAGACATGGCT	AAAGTTATGATTGTC	CATGTTGGCA	ATTGTTT
MetIleProAlaLysAsp	MetAlaLysVal	MetIleValMetLeuAlaIle	CysPh	
70	90	110		
TCTTACAAAATCGGATGGGAA	ATCTGTTAAGAAGAGATCTGTGAGT	GAAATACAGCTTAT		
eLeuThrLysSerAspGly	LysSerValLysLys	ArgSerValSerGluIleGln	LeuMe	
130	150	170		
GCATAACCTGGGAA	ACATCTGAAC	CTCGATGGAGAGAGTAGAATGGCT	CGTAAGAAGCT	
thiAsnLeuGlyLysHi	LeuAsnSerMetGlu	ArgValGluTrpLeuArgLys	LysLe	
190	210	230		
GCAGGGATGTGACA	ATTGTTGCCCTTGGAGCT	CTCTAGCTCCCAGAGATGCTGGT	TC	
uGlnAspValHisAsn	PheValAlaLeuGly	AlaProLeuAlaProArgAspAlaGly	Se	
250	270	290		
CCAGAGGCCCGAAA	AAAGACAATGTCTGGTTGAGAGCC	ATGAAAAAGTCTTGG		
AGlnArgProArgLys	LysGluAspAsnValLeu	ValGluSerHisGluLys	SerLeuG	
310	330	350		
AGAGGGCAGACA	AAAGCTGATGTGAATGT	TATTAAC	AAAGCTAAATCCAGTGAAATGAAA	
yGluAlaAspLysAla	AspValAsnValLeu	ThrLysAlaLysSerGln	End	
370	390	410		
ACAGATATTGTCAGAG	TTCTGCTCTAGACAGTGTAGGG	CAACAATACATGCTGCTAA	TC	
430	AAAGCTCTATTA			

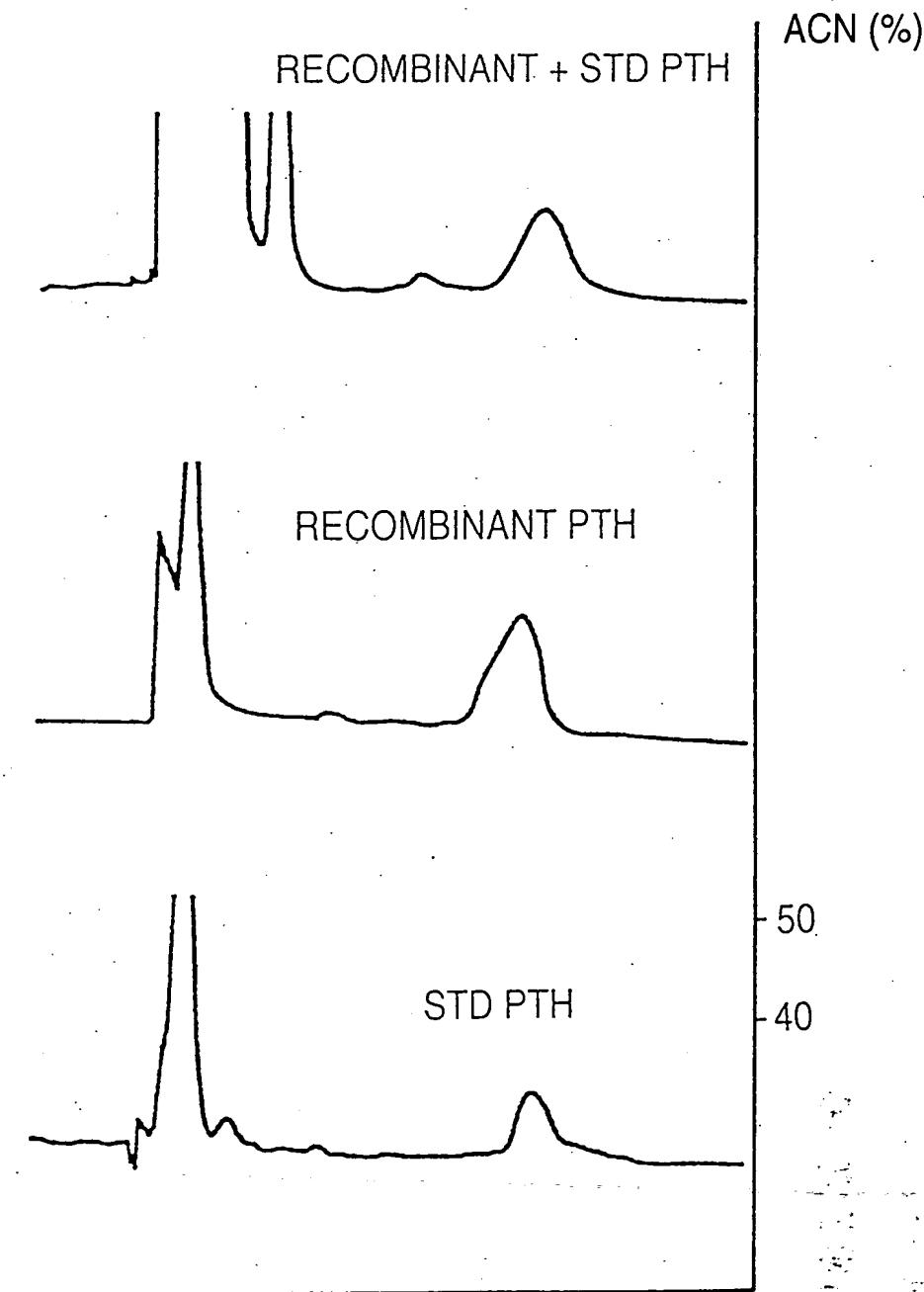
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**SHEET 6, FIGURE 9A**



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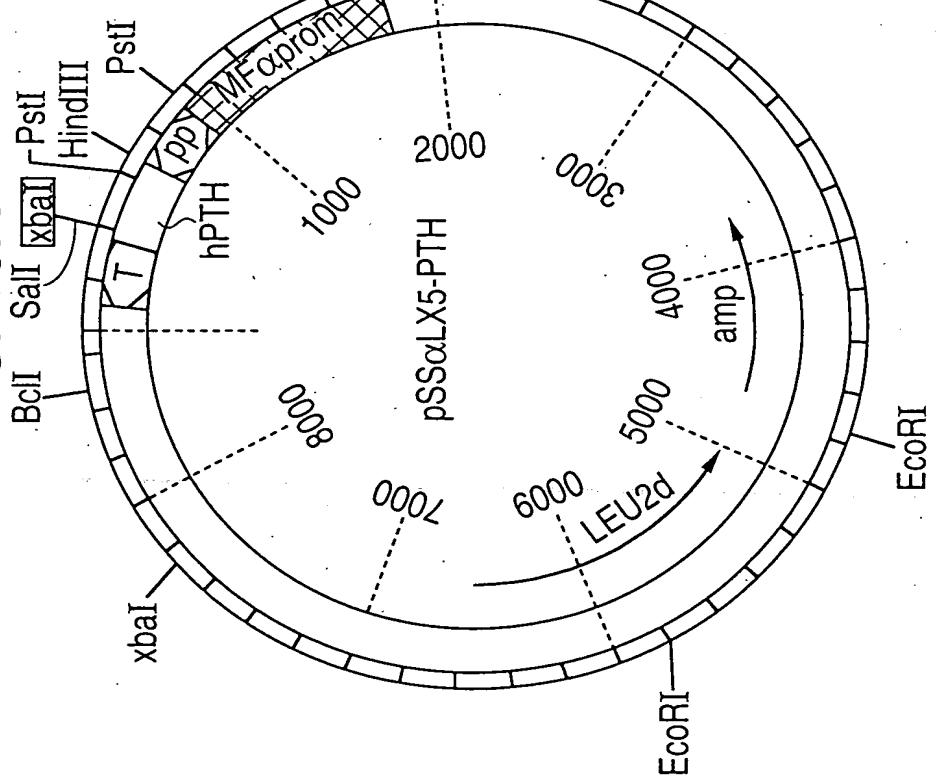
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**SHEET 7, FIGURE 9B**

**FIG. 9B**

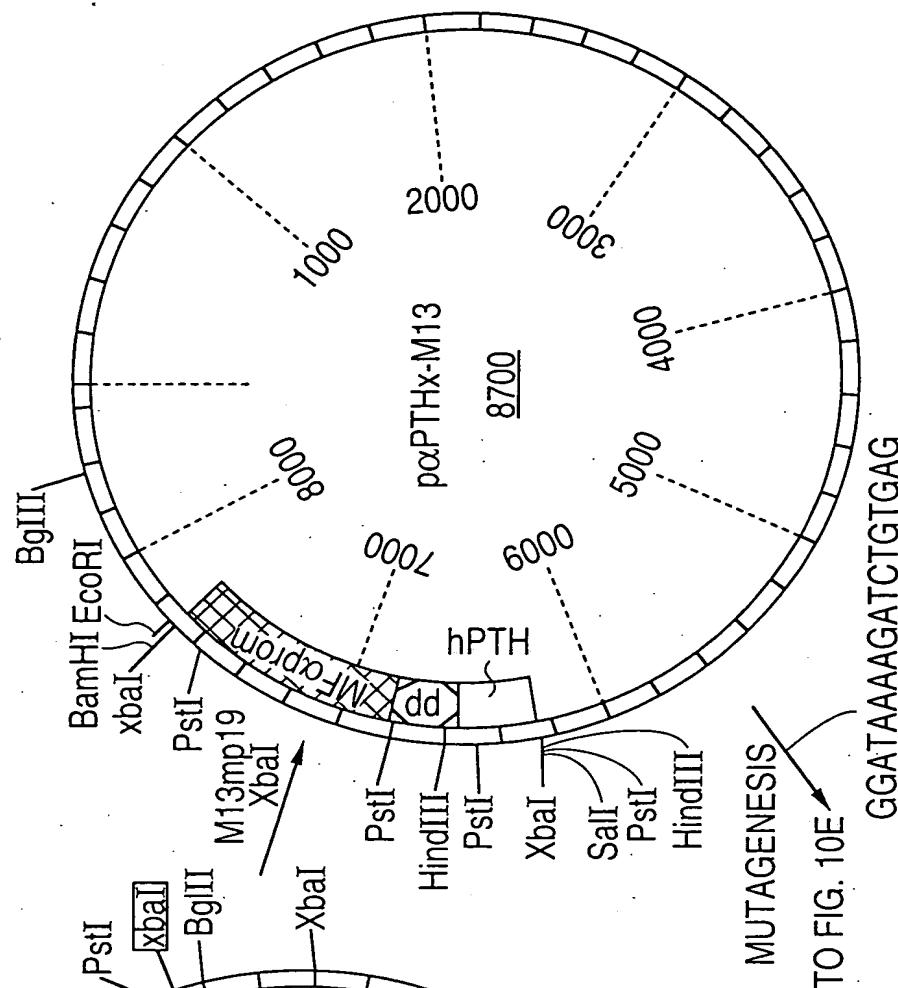




**FIG. 10A**

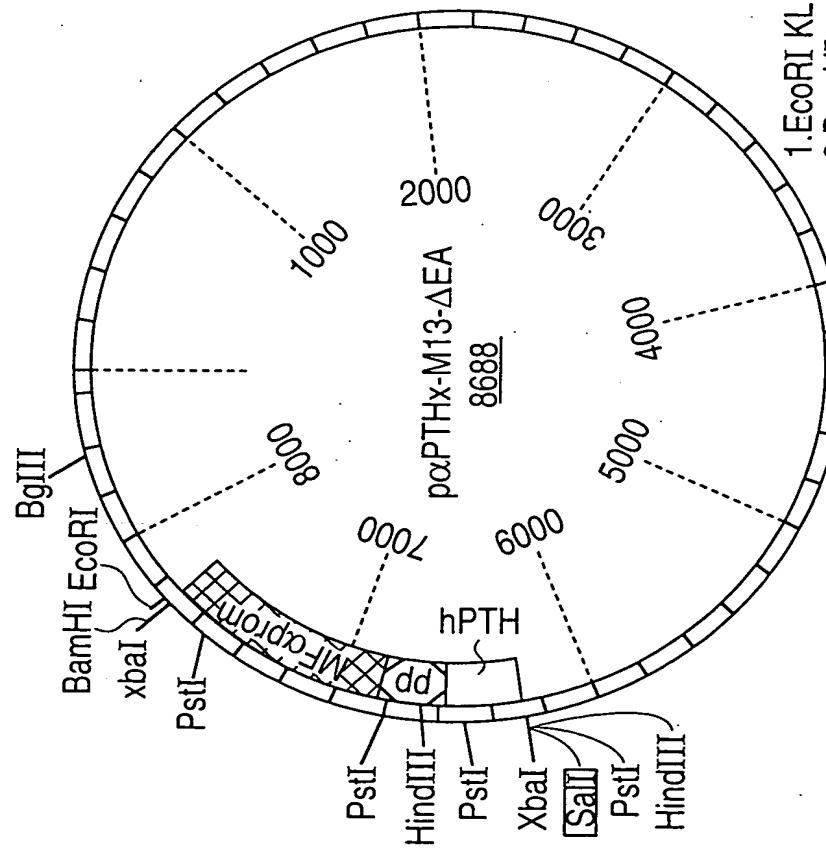


**FIG. 10B**

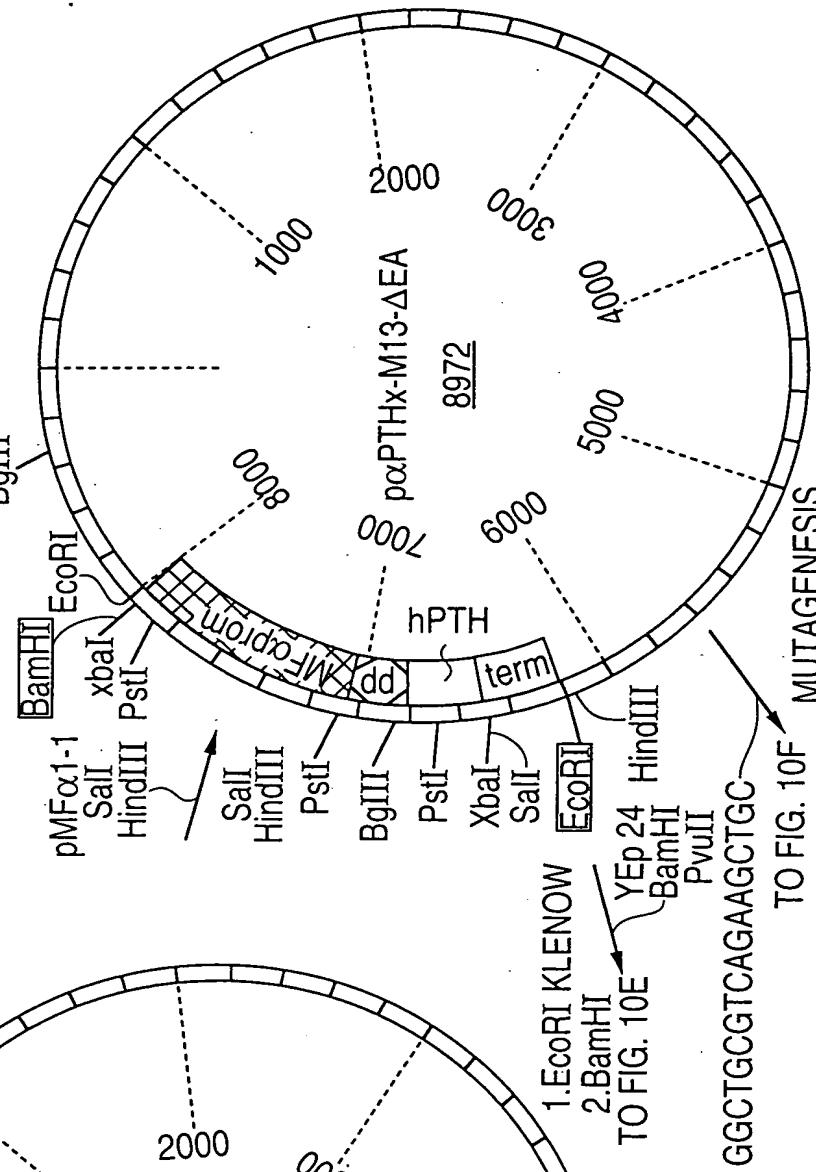


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**FIG. 10C**

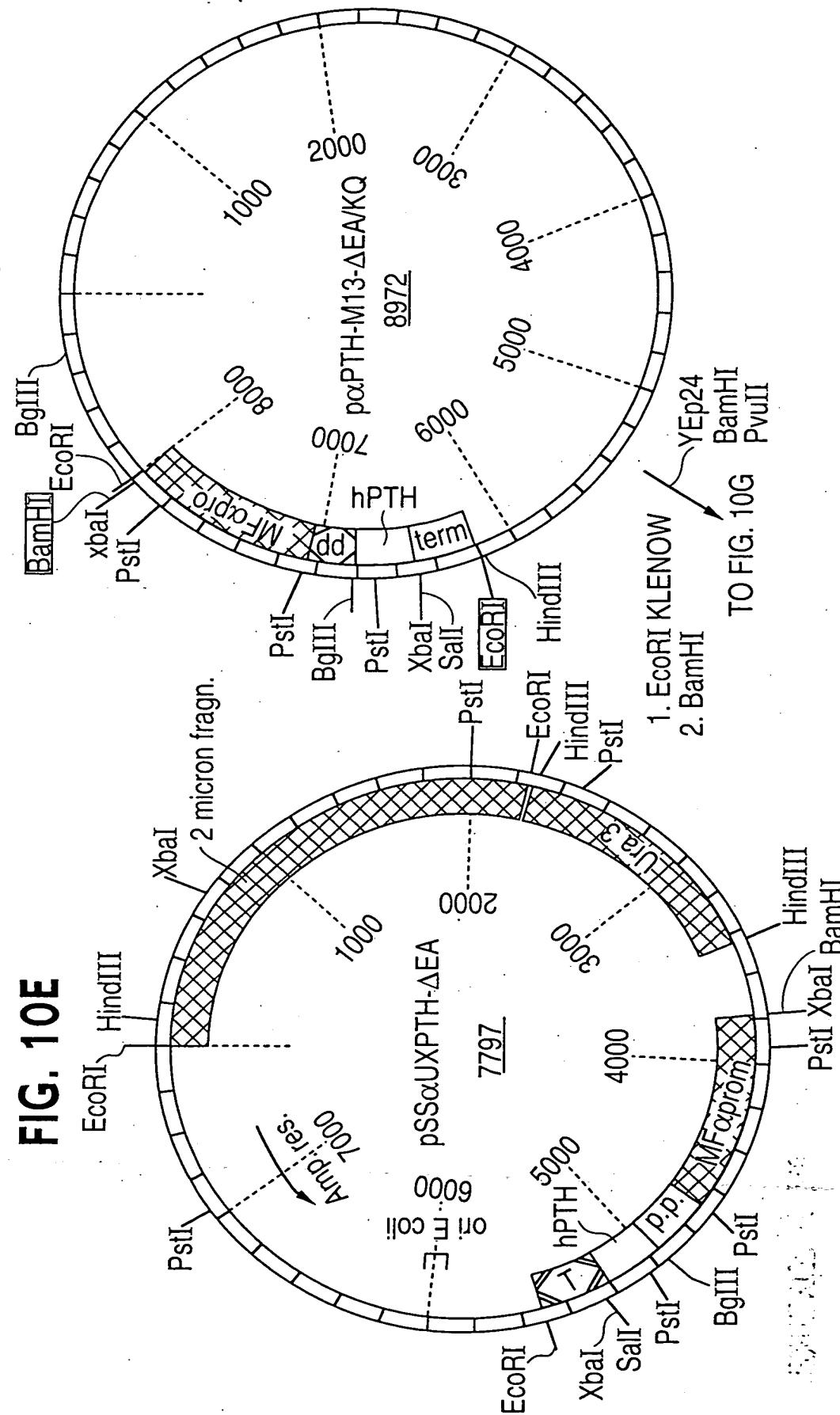


**FIG. 10D**

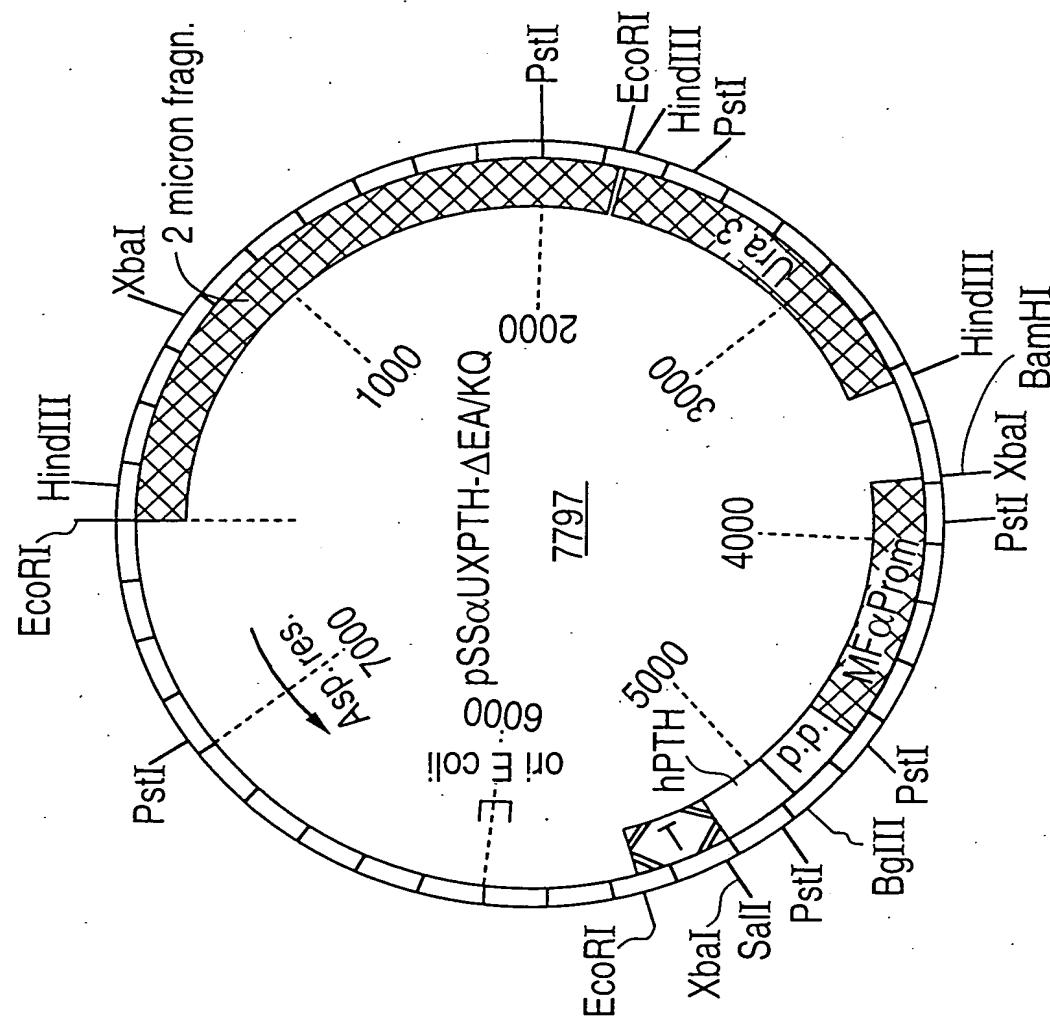


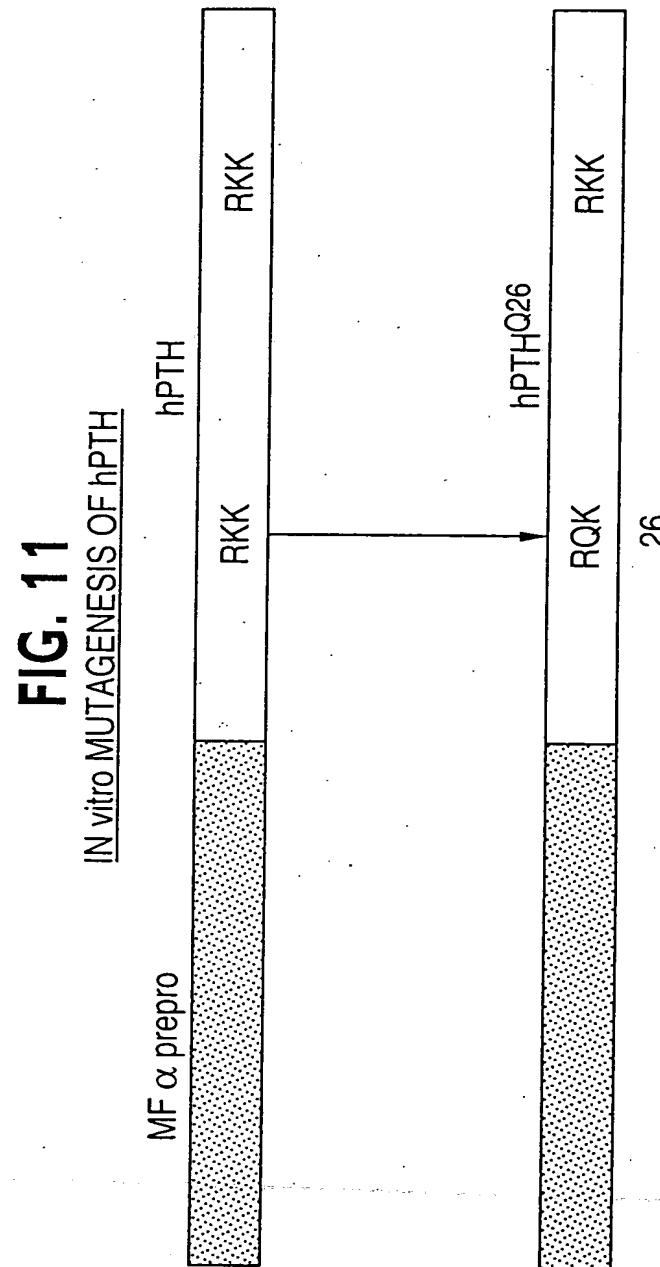
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**SHEET 10, FIGURE 10E AND 10F**

FIG. 10F



**FIG. 10G**



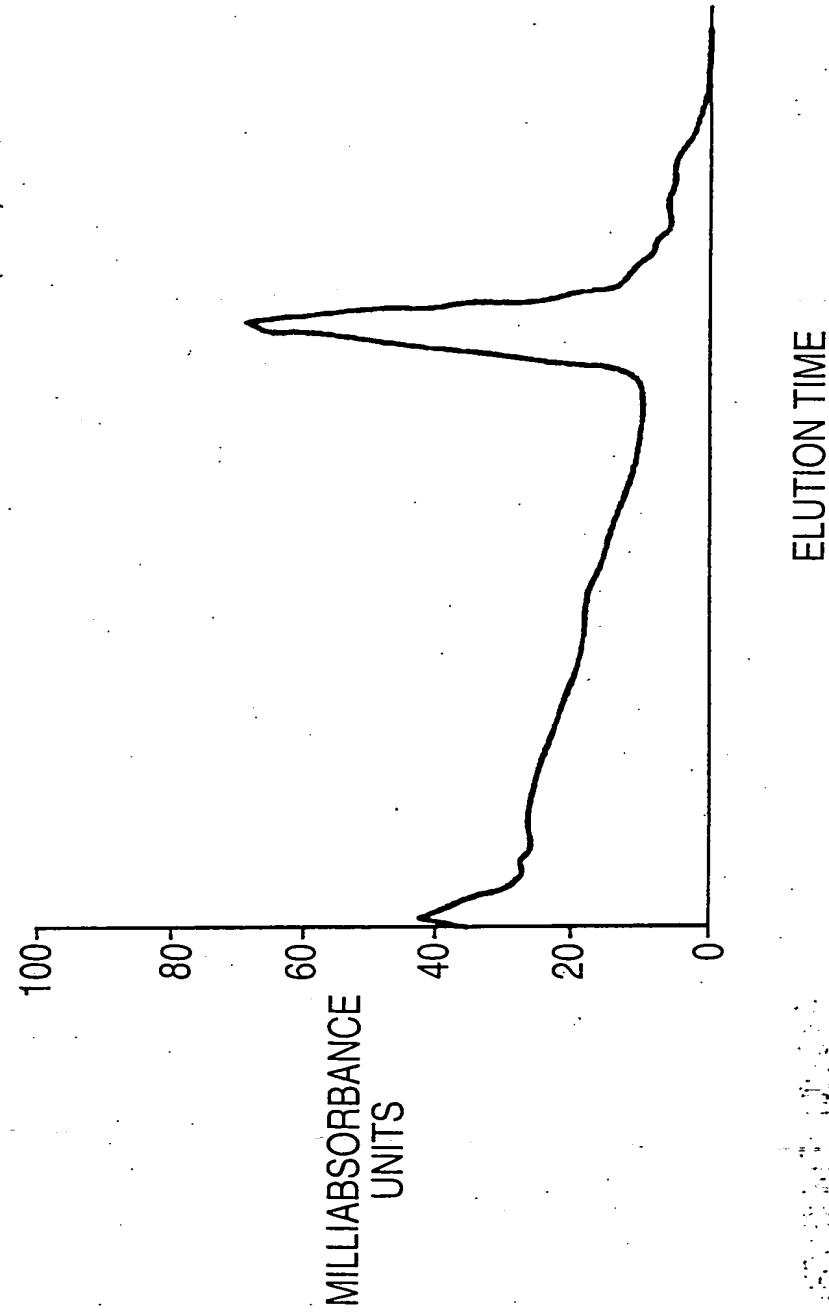




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**SHEET 13, FIGURE 13A**

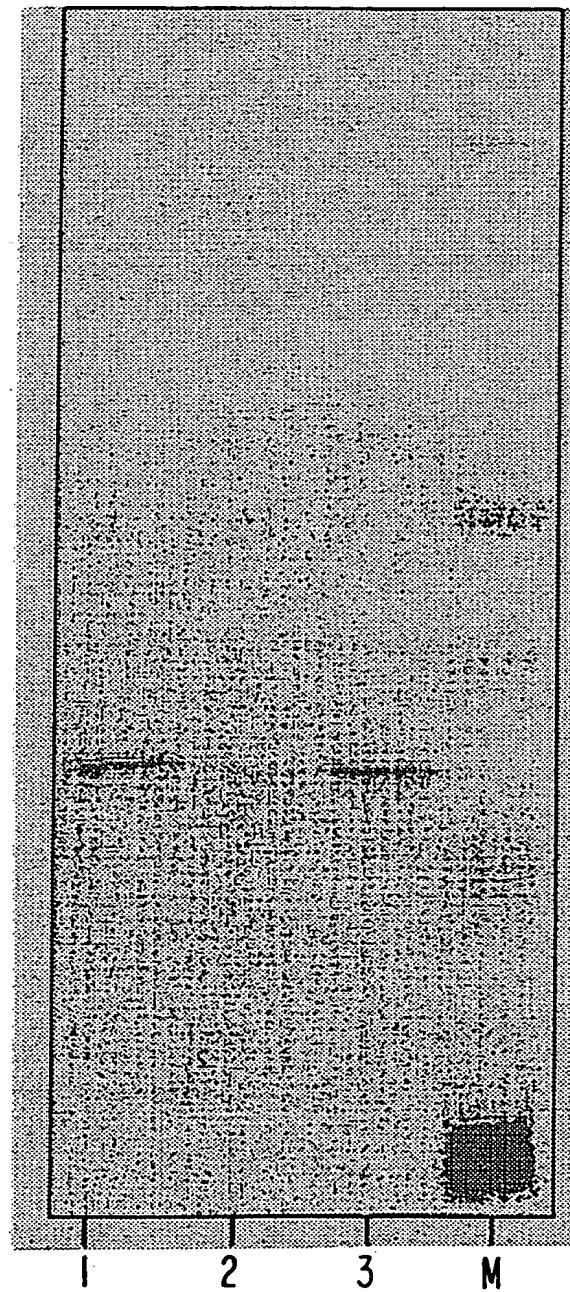
**FIG. 13A**

HPLC CHROMATOGRAM OF hPTH (Q26)



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SHEET 14, FIGURE 13B

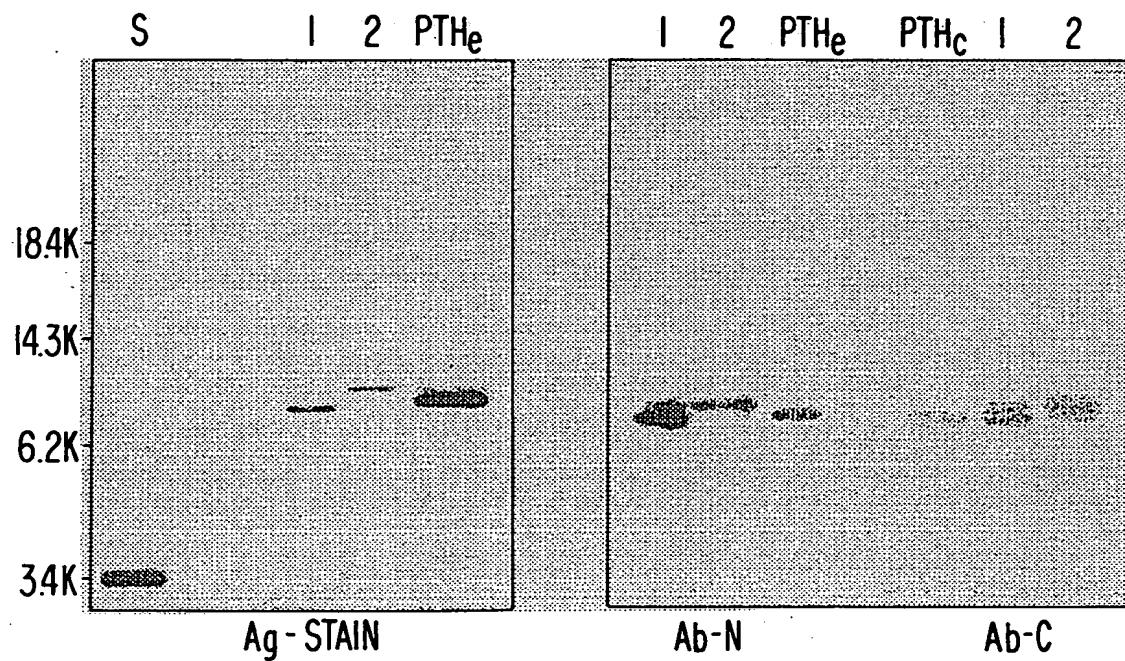
**FIG. 13B**



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**SHEET 15, FIGURE 14**

**FIG. 14**



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**SHEET 16, FIGURE 15**

**FIG. 15**

